1-1-1983

# The effects of teacher-pacing versus student-pacing on high-risk students at the community college level.

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# THE EFFECTS OF TEACHER-PACING VERSUS STUDENT-PACING ON HIGH-RISK STUDENTS AT THE COMMUNITY COLLEGE LEVEL

A Dissertation Presented

By

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Submitted to the Graduate School of the
University of Massachusetts in partial fulfillment
of the requirements for the degree of

DOCTOR OF EDUCATION

September 1983

School of Education

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ACKNOWLEDGEMENTS

I am deeply grateful to my wife Anne for her constant support and encouragement without which I would not have been able to complete my graduate education.

Appreciation is extended to my committee chairman, Dr. Richard Ulin, who was consistently available and who provided both professional and personal assistance at an exceptional level. I would also like to extend my appreciation to Dr. Charlotte Rahaim who not only served on my committee but also provided me with encouragement. In addition I would like to extend my appreciation to Dr. Walker Gibson of the English department who while on my committee was both available and helpful.

I am also deeply grateful to Professor Michael Vallante, a member of the faculty at Quinsigamond Community College, who guided me through the statistical analysis of the dissertation. Another person I owe gratitude to is my friend and typist, Kathleen Carelli. My gratitude is also extended to some other important people in my life who have made this possible, my mother Hilda, my sons Sean and Terrance, and my father and mother-in-law Leonard and Aileen Mombourquette.

ABSTRACT

The Effects of Teacher-Pacing
Versus Student-Pacing
on High-Risk Students at the
Community College Level

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Directed by Dr. Richard O. Ulin

This study compared the effects of teacher-pacing with those of student-pacing upon high-risk students at the community college level. To accomplish this, I compared the students at Quinsigamond CCommunity College who were enrolled in EN 100 English Communication Skills working under student-paced conditions in the Fall 1977 semester with the students who were enrolled in EN 100 in the Fall 1980 semester working under teacher-paced conditions. To compare these two groups, I used the Match Subject Design. Characteristics matched were age, sex, and pre-test on a standardized reading test. After matching these subjects, I determined if there were any statistically significant differences between the two groups of students in this study as reflected in (a) their achievement on the post-test of the standardized reading tests - the difference

was not statistically significant at the .05 level; (b) the final grade acquired in the EN 100 course - the difference was statistically significant at the .05 level in favor of the teacher-paced students; and (c) the combined final grade point average achieved in all courses during this semester - the difference was statistically significant at the .05 level in favor of the teacher-paced students. In addition, I measured the statistical significance of the difference between the proportion of the two groups who (a) satisfactorily completed the EN 100 course (b) satisfactorily completed both the EN 100 course and four consecutive semesters of course work over a two year period at Quinsigamond Community College. In neither of these areas did I find a statistically significant difference between the two groups.

This study also reports on interviews conducted with four randomly selected students from each of the two groups.

# C H A P T E R I

## INTRODUCTION

This investigation will look at the effects of teacher-pacing versus student-pacing upon high-risk students in developmental programs at the community college level. However, to fully appreciate this investigation in its context, it is necessary first to sketch briefly the development of not only the community college movement but also developmental/remedial education within that movement.

With the emergence of the community college in the United States, the world witnessed the creation of a unique two-year educational institution dedicated to providing a college education not only for students who have limited academic ability but also for students who have limited financial resources. This was to be achieved by the individual communities and states financially sponsoring these community colleges, so that these institutions could charge either a minimum tuition fee or none at all: these institutions were planned to be within commuting distance for every American. Furthermore, they were designed to provide not only a liberal arts program to enable some students to go onto upper level college programs but also two-year

career programs to allow others to go into the world of work.

The philosophy of the community college has been based on the same principles as the public school system; in fact, the community college system has been, for the most part, an extension of the ideals of the American public school system. These ideals are to provide:

> . . . (1) universal opportunity for a free public education for all persons without distinction based on social class, family income, and ethnic, racial, or religious backgrounds, (2) local control and support of free, nontuition educational systems and (3) a relevant curriculum designed to meet both the needs of the individual and those of the nation (Monroe, 1972, p. 1).

If one were to place these ideals in a philosophical framework, one would probably place them under egalitarianism, which essentially advocates the elimination of inequalities among men. This philosophy was given additional support with the "advent of pragmatism between 1900 and 1930. This major philosophical shift from realism and idealism had far-reaching effects on public education, and gave the two year college the intellectual support it needed for sustained expansion during this period" (Blocker and others, 1965, p. 26).

However, it would be unfair and inaccurate to say that the philosophy of the community college movement can be easily labeled. If anything, such a philosophy, "ought to be a dynamic developing kind of philosophy so that . . .

(it) can respond to contemporary needs" (Sussman, 1977, p. 3). It probably has been this flexibility in its philosophy that has allowed it to expand so rapidly over the last eighty years. In fact, in "1920, a total of eight thousand students were enrolled in fifty-two junior colleges across twenty-three states" (Palinchak, 1973, p. 27), whereas, today "5,193,000 students are enrolled in approximately 1,198 community junior colleges" (Standard, 1981-82) across the fifty states.

## Background to the Problem

Certainly the broad based philosophies of egalitarianism and pragmatism have been the cornerstones of the community college movement. This philosophical base has promoted "the remarkable growth of the two-year institution," (Palinchak, 1973, p. 28) and has allowed it to develop "curricular relevance, accessibility, and adaptability to constantly changing societal needs" (Palinchak, 1973, p. 28).

In an attempt to achieve these goals the community colleges had to cope with the implications of accessibility. This educational accessibility manifested itself at the community college level in the form of the "Open-Door Policy" on admissions which essentially "means that any person who is a high school graduate or who is an adult

citizen (over eighteen) is welcome to attend a community college" (Monroe, 1972, p. 26). This guarantee of admission to the college, however, does not in most community colleges guarantee a student admission to any program of study within the institution. Most community colleges reserve the right to place students in programs where they have a reasonable chance to be successful.

Regardless of this qualification, the community colleges have been committed to this "Open-Door Policy" of admissions, and it is commitment to this policy which has caused the community college movement to receive mixed reviews. On the other hand, the "Open-Door Policy" of the community colleges has received rave reviews by many who see it as a natural extension of the pursuit of equal opportunity for all. Naturally, this policy has been a drawing card to many who would otherwise not have considered post-secondary education. This was especially true in the late 1960s and early 1970s when there was a plethora of high school graduates applying for college admissions. With these large numbers of students applying for various colleges, the four-year colleges and universities could afford to be selective in their admission's policy. Consequently, the only alternative for the mediocre student was the community college. This and other factors caused the community college movement to experience a tremendous

growth. "Junior colleges grew from 403 in 1929 to 584 in 1945. The next big leap in the junior-college movement came after World War II, especially after 1960. By 1961, . . . a total of 678 colleges, 405 of which were public" existed (Monroe, 1972, p. 13). By 1980, the number of two-year colleges had grown to "1,215 of which 930 are public" (Standard, 1981-82, p. 24).

Community colleges have grown tremendously in number, but with this growth, they have had to face monumental challenges. The major challenge is to deal with the ever widening range of its students' abilities. In fact, many critics of the community college and its "Open-Door Policy" have given it very poor reviews. Many of these people have referred to this policy as a "Revolving-Door Policy" because it allows both easy entrance and exit. These critics seem to have some justification for their concern when one considers that "two-year colleges have much higher two-year withdrawal rates than four-year colleges: 39 percent compared to 24 percent" (Ramist, 1981, p. 23).

In the light of such criticism through the late 1960s and 1970s, the community colleges began to address the intent of the "Open-Door Policy." The intent was to provide a post-secondary educational experience that was both accessible and attainable. It was not in the interest of the institution or the students for community colleges

to suggest to students with a wide range of academic preparations that they could negotiate this post-secondary experience when, in fact, the community colleges were not adequately prepared to fulfill the intent of this policy. This has been especially true for the non-traditional or high-risk student. "The community college has not learned how to deal with, and it cannot count on, the abilities of the marginal student. It has not developed the know how or the real commitment for dealing with him" (Moore, 1970, p. 11).

To answer such criticisms in the face of increasing enrollments of students with limited academic backgrounds, community colleges introduced a wide variety of compensatory programs. Although these programs were remedial in nature, many educators wanted to get away from this negative connotation and they wanted to broaden the intent and scope of these programs. Therefore, several other euphemistic titles began emerging such as "academic skills" programs, "basic skills" programs, and "developmental skills" programs. The entitlement that has gained the broadest acceptance is developmental program. A developmental program might be anything from a group of remedial courses to a separate developmental curriculum. Whatever the shape or form of these programs, the intent was clear, i.e., the community colleges were attempting to live up to their

promise of providing a meaningful post-secondary educational experience for all students who entered the open-door of the community college.

From the wave of educational innovations of the 1960s, the developmental specialist began to gather ideas from educational theories that seemed ideally suited to meet the needs of this new diverse population. One of these ideas that had major implications for the developmental education movement was put forth by Benjamin S. Bloom who maintained that: "Most students (perhaps over 90 percent) can master what we have to teach them, and it is the task of instruction to find the means which will enable our students to master the subject under consideration" (Bloom, 1968, p. 1).

Many working in compensatory education saw in Bloom's theory an encapsulation of their feelings that the students they had been working with could become academically successful. They saw in print a recognized scholar in the field of learning saying that most students can be successful given the appropriate kinds of instruction.

At this time, the use of specifying educational objectives in the classroom was experiencing a resurgence. Although the idea of specifying educational objectives "specific, observable student action(s) or product(s) of student action(s)" (Cohen, 1970, p. 1) pioneered decades

ago at the University of Chicago by Ralph Tyler, it was not until the early 1950s when various forms of audio-visual media were introduced to higher education that specifying educational objectives gained impetus in education. Also at this time, programmed learning as proposed by B. F. Skinner in "The Science of Learning and the Art of Teaching" in the Harvard Educational Review, 1954, and his subsequent works were having an impact on education. Another major work that was introduced at this time was Bloom's Taxonomy of Educational Objectives, 1956.

Also occurring at this time was the humanistic movement led by such men as Carl Rogers, Abraham Maslow, and Rollo May who have as "A common thread in their ideas . . . the establishment of a relationship between individuals characterized by openness to their values and the practice of empathetic communication. It involves accepting the student where he is before attempting to move him somewhere else" (Roueche and Snow, 1978, p. 13).

With the development of these ideas came a cogent reminder to educators in general and particularly to the ones in developmental education, that they should be responsive not only to the cognitive domain but also to the affective domain of their students. This became particularly germane to educators working with the high risk students, for heretofore their efforts (which had proven

relatively unsuccessful) had been directed fundamentally towards the cognitive domain. However, with the humanistic influences impacting more on educators at this time, the need for educators to be more honest, open, and accepting towards their students became apparent. Concomitantly, teachers involved with the high-risk students felt it imperative to accept their students where they were, to inform them of what was expected of them, and to attempt to provide them with an avenue to achieve success.

As the humanistic movement became more visible on the educational scene, it brought an awareness of the importance of accepting the students at whatever point they happened to be. In addition, this movement reemphasized the significant role honesty and openness play in the learning situation. The movement became important to the educators working with high-risk students because it gave legitimacy to these educators' intuitive belief that acceptance, openness, and honesty were important in providing a successful learning experience.

However, there was the usual problem with theory and practice. The problem was how to develop effective learning strategies to put the aforementioned beliefs into practice. At this time, some educators saw a connection between these beliefs and the use of programmed learning and stated educational objectives. On the surface, this

seems to be an unholy marriage between humanist and behaviorist. But, when one examines this more closely, one can discern the possibility of fusing the acceptance of humanism with Skinner's programmed learning, thus allowing a student to start at any given point and progress according to his particular rate of learning and/or ability. Furthermore, when one considers a union between stated educational objectives and openness and honesty, one can readily see a connection. Obviously there would be times when these two theories would clash, and it would be at a time that the educator would have to modify these theories in the best interest of his students.

With a greater number of faculty interested in developing strategies to deal with the high-risk student, more experimental methodology was being employed through the 1970s. However, the paucity of hard statistical data available to assess these programs has concomitantly made it difficult for the developmental specialist to gather from available research those methods which are effective with the high risk student. Faculty in developmental programs have a great deal of difficulty denying services to students for whom this service may mean the difference between success or failure.

However, there is evidence that suggests certain components within a college or program do lead to increased

retention. "In a study done in four community colleges in Texas, administrative intervention, special counseling, and individualized instruction were found to increase student retention" (Cohen, 1979, p. 15). The degree to which each of these factors affected the student is difficult to determine.

It became clear, though, that individualized instruction and the sharing of learning objectives with students do play a major role in successful developmental programs. It,therefore,became incumbent upon educators designing developmental programs to design realistic learning objectives for the high-risk student. It is important if not redundant to point out "the relationship between high-risk student success and the institutions providing written learning objectives. The colleges that distribute them have greater student success and greatly reduced attrition" (Roueche and Snow, 1978, p. 25). As many developmental specialists began to design learning-objectives for the high-risk student, they soon realized that they faced a student population with diverse backgrounds and needs. In order to design appropriate instruction, they needed to diagnose the students' needs. Once they had done this, they realized that they needed to design an individualized program for each student. To do this, they had to have at their disposal a course of study that was flexible

and comprehensive. It had to allow students who were at the lower end of the ladder in academic preparation to start where they were while providing instruction for the better prepared student. In addition, this course of study had to provide immediate feedback for these students in order to maintain their motivation and interests, as has been suggested by Skinner and others.

From all of this, it became apparent that what was needed was some form of individualized instruction for the high-risk student. During the late 1960s and through the 1970s, several forms of individualized instruction were being experimented with. As indicated previously, programmed instruction (PSI) as promoted by B. F. Skinner in the 1950s is the basis from which most of the efforts towards individualized instruction sprang. For obvious reasons, B. F. Skinner's behavioral approach lends itself rather appropriately to individualized instruction because it breaks up the traditionally large package of instruction into small units of learning with immediate feedback and reinforcement; however, "The short and intensive history of programmed instruction illustrates an oversimple, overmanaged, and overcontrolled use of reinforcement" (Erikson, 1972, p. 1). This coupled with the impersonal aspects of PI soon led to its fall from grace in educa-

tional circles. Nevertheless, the outgrowths from these roots were such forms of instruction as Audio/Tutorial (A/T) instruction, Personalized System of Instruction (PSI), and Computer-Assisted Instruction (CAI).

These later forms attempted to compensate for the deficiency in the PI form of instruction. Of these later forms, A/T is probably the forerunner. In 1961, at Purdue University, Samuel Postlethwait began experimenting with A/T learning. Essentially A/T learning employs a learning system that uses as one of its main components an audio tape as a programming device to direct students to various kinds of learning experiences. These experiences may include an on-hands experiment and/or viewing of a particular film. Also within A/T learning, there are built in independent study sessions as well as usually some type of weekly group assembly. Furthermore, within the A/T method are built in integrated quizzes to provide feedback and reinforcement.

One of the newest kids on the educational block is Computer Assisted Instruction (CAI). When used in an educational setting, it is commonly understood to mean "those programs where the computer is used to interact tutorially with the student as he or she moves through a self-paced program or course of instruction" (Cross, 1976, p. 61). It would seem that with the computer's varied capabilities to

diagnose, prescribe, and deal with student's weakness, CAI would be in great demand for working with high-risk students. However, it seems that this is not the case. This could be for a variety of reasons such as the lack of adequate programming, the cost factor, or even its newness. Whatever the reasons, CAI has received mixed reviews from the critics of educational drama.

One of the major forms of individualized instruction attaining great notoriety is Personalized System of Instruction (PSI). PSI was developed by Keller and Sherman "At the University of Brasilia in 1964 and introduced broadly into this country through an address given by Fred Keller to the American Psychological Association" (Cross, 1976, p. 78). In fact, it is known by many as the Keller Plan. This system employs many of the elements of the A/T learning system. PSI differs in that it relies more on print material than does the A/T system. In addition, PSI is considered to be better organized in terms of its stated educational objectives and it provides more personalized attention for the student.

Considering the sophisticated forms of individualized instruction being utilized, it would seem that one of them or some form thereof would meet the multi-dimensional need of the high-risk student, and, in fact, A/T, CAI, and especially PSI are in use with many high-risk

students. However, the results are not all that conclusive.

## Need for the Study

The implications of increasing numbers of high risk students, climbing attrition rates, and the increasing need for meaningful career options at the community college level are far-reaching, especially in the area of curriculum. No longer can the community colleges rely on the packaged curriculum modeled on the first two years of the university as its transfer curriculum because many of its new or high risk students are coming to its doors with virtually no academic background. The transfer component of the community college is being adversely affected by the academic inability of its new population. However, the career programs are being equally adversely affected, for many of the career programs require minimal level of proficiency in reading and writing. Also, as part of any career program, there are certain general education requirements such as English, history, psychology, and/or math. However, both the transfer and career programs have felt, in the form of high attrition rates, the negative impact of an inflexible traditional curriculum upon the academically ill-prepared.

In an effort to respond to these concerns, many community college educators, especially those working in

developmental programs with high-risk students, have been employing a myriad of instructional innovations. In the forefront of these innovations has been the use of various forms of individualized instruction. The important ingredient for many who have been working with individualized instruction has been the element of self-pacing i.e., allowing a student to move at his own rate. The thinking here has been, in part, that suggested by Carl Rogers, Abraham Maslow, Eric Fromm, and others, i.e. that a person's inherent motivation will propel him toward self actualization and/or self-growth. In other words, if a student is placed in an ideal situation which allows him to correct his deficiencies and/or become a better student, he will naturally pursue his studies at his most efficient pace.

Whatever one's basis for including self-pacing in the curriculum, "The individualization of learning lies at the heart of the instructional revolution. The movement is young, but it is accelerating rapidly now, so that almost every college in the country has been affected in some way by the phenomenon of self-paced learning" (Cross, 1976, p. 74).

However, the problem of attrition and withdrawals from community colleges remains a serious one as reflected in the following statement, "Two-year colleges have much higher two-year withdrawal rates than four year colleges"

(Ramist, 1981, p. 23).

One should consider that most high-risk students in community colleges come from educational experiences that have been not only negative but also, in some cases, downright painful. Although few educators question the logic and soundness of individualizing instruction for these high-risk students, there does seem to be some question as to the merits of allowing these students to self-pace themselves over a semester period of time or longer.

## Purpose of the Study

It was precisely this concern i.e., the ability of high-risk students to self-pace themselves at the community college level that prompted this writer to conduct this study. The main purpose of this study is to measure and compare the effects of self-pacing versus teacher-pacing in a developmental/remedial basic skills course entitled EN 100 - English Communication Skills offered to entering freshmen at Quinsigamond Community College. This course is offered to those entering freshmen who score below designated norms on the Nelson Denny Reading Test and on a locally generated informal grammar survey. The effects of self-pacing versus teacher-pacing will be determined by the student's achievement as represented on the Nelson-Denny

Reading Test, as reflected in the student's grade in the course, and as suggested in the student's overall grade point average for all the courses he took the first semester. In addition, the study looked at the number of students who satisfactorily completed the EN 100 course and of those, those who completed four consecutive semesters. To do this, this study evaluated two groups of students who were required to take this course taught by the same teacher under two conditions. Under both conditions, an individualized modified audio/tutorial modularized approach was used. They differed only in that under the first condition the students were teacher-directed, student-paced while under the second condition the students were teacher-directed, teacher-paced.

## Definition of Terms

Developmental program. For the purpose of this study, a developmental program is any course or combination of courses that attempts to remediate, correct, and/or refine skills and attitudes needed to have a successful college experience as determined by the respective institutions.

High-risk students. For the purpose of this study, the high-risk students are those students who score below

the tenth grade reading level on the Nelson-Denny Reading Test and who get less than thirty correct on the locally generated informal grammar survey and who are recommended to take the basic skills course (EN 100) at Quinsigamond Community College.

Program of study. For the purpose of this study, program of study is the form each student is given in EN 100 that indicates what assignments the student must satisfactorily complete in order to complete the course. These assignments are determined by the results of a series of diagnostic tests.

Self-pacing. For the purpose of this study, self-pacing means the student determines when and at what pace he shall work on his program of study.

Teacher-pacing. For the purpose of this study, teacher-pacing means the teacher determines when and at what pace the student shall work on his program of study.

Career program. For the purpose of this study, a career program is any two year program that prepares a student for entry into a particular career such as nursing, dental hygienist, and retail management.

Transfer program. For the purpose of this study, a transfer program is any two year university parallel program that prepares a student to enter into his junior year at a four year college or university in a program

such as liberal arts, business and engineering.

Satisfactorily completed. For the purpose of this study, satisfactorily completed means achieving a grade average of "C" or better.

# C H A P T E R II

## REVIEW OF THE LITERATURE

During the 1960s and 1970s innovations in education were being widely employed throughout all levels of education. This was especially true at the community college level amongst the high-risk students. The various forms these innovations often took were some sort of systematic learning approach such as Audio-Tutorial - A/T, Computer Assisted Instruction - CAI, Personalized System of Instruction - PSI or some form thereof. A major element in these forms of instruction is a student-paced modularized approach.

In reviewing the literature, one is struck by the number of articles lauding the positive effects of these various forms of individualized instruction. This seems dramatically so in the case of PSI. Several authors found in their review of 261 papers and reports on PSI: "On the basis of present evidence it can be concluded that content learning (as measured by final examination) is adequate in Keller courses. In published studies, content learning under the Keller Plan (PSI) always equals, and most often exceeds, content learning under the lecture method" (Kulick, Kulick, Carmichael, 1974). Born and his

associates found in a study comparing students being taught psychology by the lecture discussion method; the Keller Plan (PSI); modified Keller Plan and a group that rotated among the former that the Keller Plan group exhibited superior performance, (Born, Gedhill, and Davis, 1972). Another reviewer of the literature, Ruskin, indicated he found PSI courses superior and placed the increase in student achievement from 10 to 15 percent over traditional lecture approaches, (Ruskin, 1974).

## Studies on A/T, PSI, and CAI

When one reviews the literature on audio-tutorial learning (A/T), he cannot help but notice the lack of hard data either supporting or negating its effectiveness. It seems that the proponents of A/T have spent more time explaining it than analyzing it. However, several researchers have found that most students prefer the A/T approach to the lecture approach and that they learn as well as, or better than, they do in conventional classes, (Mormon, 1971), (Richardson, 1971), and(Wilson, 1972).

On computer assisted instruction (CAI), there is very little data available, especially as it relates to the community college level because CAI has as yet not been widely practiced. Consequently, there has been limited

research done in this area. However, one major program entitled TICCIT (Time-shared, Interactive, Computer Controlled Information Television) attempted to illustrate how CAI could be brought down to an affordable level. The developers of TICCIT chose community colleges as their target audience and mathematics and English courses as their intended subject matter: One of the key elements of this program was that the students would self-pace themselves through this program. One of the major conclusions of a study done on the program indicated the following:

> Despite the improved student achievement and sometimes favorable student attitudes made possible by the TICCIT program, there were dramatic decreases in course completion rates. This may reflect a generic problem with self-paced instruction in that students unable to manage their own learning fail to satisfy course requirements. Such students constitute a sizeable percentage of the total enrollment at community colleges, (Alderman, 1979, p. 18).

Computer Assisted Instruction has neither been practiced or researched sufficiently to determine its effectiveness at this time. However, the TICCIT report does note a problem area which is an integral part of PSI, A/T and SFT, i.e. student self-pacing. Student self-pacing seems to occur as a problem most often amongst the poorer students. For instance, Born and Whelan found "the PSI section had three times as many withdrawals as the lecture section. Under closer examination, it was found that the poorer student (the one with the lower GPA) was withdrawing"

(Born and Whelan, 1973).

## Studies Focusing on Self-Pacing

As we examine the literature dealing with A/T, PSI, or SFT which incorporate individualized student paced modules with high risk students, we notice that some reports are suggesting negative results. In an article evaluating PSI it was found that "71 percent of the faculty respondents to a recent survey reported difficulty with student procrastination" (Hoberock and others, 1974, p. 3). Born and his associates who had reported superior performance experienced by students utilizing PSI (Born, Gedhill, and Davis, 1972) went on to observe in a later study that "Specifically, poor to mediocre students withdraw in greater numbers from PSI courses than good students" (Born, Gedhill, and Davis, 1974).

Furthermore, in another report talking about self-paced instruction in general, it was noted "In our study we found that allowing students more than one semester to complete a course was negatively related to their completing a degree. We understand this in light of the often-mentioned criticism of self-paced instruction: Students procrastinate" (Roueche & Snow, 1978, p. 101). In addition, Cross points out that "One of the most disturbing problems

with PSI has to do with its greatest advantage - the self-pacing feature" (Cross, 1976, p. 98).

Although the literature again and again suggests that both faculty and students who utilize some form of systematic instruction with an individualized student-pacing component, consider it to be superior to the lecture-discussion method, they seem reluctant to advocate it unconditionally. A recent study found "A further contradiction exists in student preferences in that a great majority of the students indicated that they preferred to work on their own, but fewer than half of the students preferred to be responsible for their own learning and progress and for meeting the stated course objectives" (Moten, 1977, p. 24). This point had been previously noted by Connolly and Sepe who found that "the majority of students preferred all the characteristics of individualized instruction except having the responsibility for learning placed on them" (Connolly and Sepe, 1972, p. 16).

These observations do not clearly denigrate the use of individualized, student-paced form of instruction; however, there does seem to be the hint of concern that all is not well with individualized student-paced instruction. Further, these criticisms suggest that the educational community take a hard look at the use of the self-paced approach with high-risk students.

Another study dealing with computer-assisted instruction indicated that "Research on computer-assisted instruction (CAI) has consistently shown that when students control the learning program they often terminate instruction too early and fail to learn the defined objectives" (Tennyson and Rothen, 1979). Further, it should be noted that "instructional research (Divesta, 1975; Rothen and Tennyson, 1978) and applied projects (Stienberg, 1977) dealing with variables of learning control (using a rather large or complex learning task) have failed to demonstrate that students can make and carry out discussions of content element selection and personal assessment" (Tennyson, 1981, p. 425).

In other words, the practice of allowing students to determine what they are going to learn within a given course and assess their progress within that course has not been proven beneficial.

## Summary

The thrust of my investigation is not to examine whether student-pacing is effective for all students but to assess whether student-pacing is appropriate for high risk students especially at the community college level. As we peruse the literature dealing with instructional strategies

that utilize individualized self-paced modes of instruction, we begin to observe indications that suggest the use of self-pacing with high-risk students at the community college level may have a detrimental affect upon them.

# C H A P T E R III

# METHOD AND FINDINGS

## Design of the Study

The nature of this study dictated that the research be done in a ex post facto manner. This type of research involves examining the interaction of an independent variable or variables with a dependent variable or variables in retrospect.

This study compared students at Quinsigamond Community College who were enrolled in EN 100 (English Communication Skills) in the Fall 1977 semester with the students who were enrolled in EN 100 in the Fall 1980 semester. This course is designed to develop and refine students' skills in reading, writing, and studying. In this course, the students' strengths and weaknesses are assessed and an individualized program of study is designed for each student as indicated in Appendix G. Then, the student begins at his/her respective level in the above areas, and is guided through the program of study. Further clarification of the goals and objectives of this course are indicated in the syllabus of this course in Appendix F.

This class met four times a week in a basic skills

laboratory known as the Communication Skills Center. This was true for the students working under both conditions in this study. The Center was open from 8:00 A.M. - 9:00 P.M. Monday through Thursday and from 8:00 A.M. - 4:00 P.M. on Friday. Also, the Center consists of one large room, 120 by 20 feet, with an adjacent classroom for small group work. In the Center there are various types of equipment and materials. For example, the Center has Craig reading machines to develop reading speed and comprehension; it also has various kinds of programmed multi-level reading comprehension kits consisting of short reading passages with follow-up questions. The Center also has carrels with audio playback machines which students use while working on the various audio-tutorial units as well as other kinds of equipment and materials.

In addition, it should be noted the students included in this study had no option to select any other form of instruction, and I was the teacher who taught both groups. I can say with conviction that my enthusiasm was the same while teaching the students in both conditions. When I employed student-pacing, I did so because I felt that this form of instruction would be very effective. However, by 1980 I had come to have serious doubts about the effectiveness of student-pacing, and I decided to employ teacher-pacing because it seemed more appropriate

for high-risk students. It is also important to note that in both cases I employed the same audio-tutorial modularized approach and utilized the same standardized modules. The students in the Fall 1977 group determined the pace at which they would learn; whereas, with the Fall 1980 group, the teacher determined the pace at which students would learn. Consequently, the only major difference between the two forms of instruction was in who determined the pace of learning.

If one is to understand fully the import of pacing in this study, one must see how the students were dealt with in both groups. For instance, the students working under the student-paced condition had a class scheduled to meet four times a week; however, it was made clear to them that attendance was optional. At the same time, it was pointed out that the instructor would be there at every scheduled class to provide whatever advice the student might need for working with various materials or equipment. Further, it was pointed out to the student-paced students that they could work in the skills Center at other than the regularly scheduled class times.

At the beginning of their course the overall semester objectives (See Appendix F) were explained to the student-paced students. At this same time, the material

they were expected to study as indicated on their program of study (See Appendix G) was explained, and the materials and equipment and how to use them was explained. During the first three weeks of the course, the student-paced students met as a group several times and were shown how to utilize the various materials and machines they would be working on throughout the semester. After this three week period, the students were left on their own to complete the course syllabus as well as their own programs of study, with the instructor available for advisement.

The situation for the teacher-paced students was somewhat different. The first three weeks of the course was exactly the same as it was for the student-paced students. After this, however, attendance was required for the teacher-paced students, and when these students missed more than two consecutive classes, they were contacted.

Another major difference between the conditions under which these two groups worked was that with the teacher-paced students the teacher began each class by meeting first with the students as a group and going over the objectives for that class. Then the students began working on their various individualized materials as indicated in their programs of study. Another major difference between the way the students were dealt with was that

the teacher set weekly objectives for the teacher-paced students and monitored them.

In other words, there were overall course objectives set forth for students working under both conditions, but these objectives were broken down on a class by class and week by week basis for the teacher-paced students but not for those who were student-paced. Furthermore, the students who were teacher-paced were told which materials to complete at what time in the semester to finish the course in a timely fashion, whereas, the student-paced students had to determine this themselves. Therefore, in this study, I have students working under two conditions (a) the student-paced condition in which students determined at what pace they would complete the EN 100 objectives and (b) the teacher-paced condition in which students were told by the teacher at what rate they were to complete the objectives. The only major difference between the instructional procedures followed by these two groups is in the pacing.

## Hypotheses

The five hypotheses made and discussed in this study are the following:

1. There is a statistically significant difference in achievement at the end of the first semester on

the Nelson-Denny Reading post tests between students in the teacher-paced group and those in the student-paced group. (I hypothesized that the teacher-paced students will out perform the students who set their own pace.)

2. There is a statistically significant difference in the grades achieved at the end of the first semester in the basic skills course (EN 100) between the students in the teacher-paced group and those in the student-paced group. (I hypothesized that the teacher-paced students will out perform the students who set their own pace.)

3. There is a statistically significant difference in the overall grade point average achieved at the end of the first semester between the students in the teacher-paced group and those in the student-paced group. (I hypothesized that the teacher-paced students will out perform the students who set their own pace.)

4. There is a statistically significant difference in the number of students who satisfactorily completed the basic skills course (EN 100) between the students in the teacher-paced group and those in the student-paced group. (I hypothesized that the teacher-paced students will out perform the students who set their own pace.)

5. There is a statistically significant difference in the number of students who satisfactorily completed the EN 100 course and four consecutive semesters of course work between the students in the teacher-paced group and those in the student-paced group. (I hypothesized that the teacher-paced students will out perform the students who set their own pace.)

## Population

To compare the effects of student-pacing versus teacher-pacing, a Match Subject Design was used. Students

were matched on the basis of age, sex, and pre-test results on the Nelson-Denny Reading Test. The student-paced group started out with a student population of 41, whereas, the beginning enrollment in the teacher-paced group was 47.

In order to develop the matched pairs sample for students in each of the two conditions, I first separated subjects by sex. Subjects were further identified according to age, into two categories, recent high school graduates with an age range between 17-19 years of age and students 20 years of age or older, whom I label the late entry student. Next, these subjects were further identified according to pre-test percentile ranks on the Nelson-Denny Reading Test. Because these students were directed to this course based on low placement tests scores, the range of the pre-reading test percentile rank was limited to the lower range. Therefore, the two categories used for matching were the 0-6$^{th}$ percentile rank and the 7-14$^{th}$ percentile rank. The resultant categorizing of subjects is indicated in Appendix A.

After all subjects were identified according to age, sex, and pre-test percentile ranks, the subjects' names together with this information was inputted in the form of discrete data lines into the TRS-80 microcomputer. A computer program which searched each data line sequen-

tially generated a list of all subjects of the same sex, within the same age range (17-19 or 20 and over), and within the same reading pretest score categories. This resulted in a listing of 36 pairs of matched subjects.

## Treatment of the Data

To test the first three hypotheses, I used "t" tests because I was measuring the difference between the means of the two groups. However, to test the remaining two hypotheses, I was unable to use "t" tests because the data was not represented in average scores. Since the data was in ratio form, a test for proportion had to be used. Consequently, I used the standard error of a proportion test.

## "t" Tests on the Nelson-Denny Post Test

It was hypothesized that the Nelson-Denny post test results would show a significant difference between the post test achievement of students in the teacher-paced group and the achievement of those in the student-paced group. I hypothesized that the teacher-paced students would out perform the students who set their own pace. Only the post-test scores were used because those students

had been matched for their pre-test scores. Further, it should be noted that these students were matched on the basis of percentile ranks. These ranks tend to represent a more general category than raw scores. For instance, in the Examiner's Manual of the Nelson-Denny Reading test on the conversion chart for grade 13, the raw scores from 1-50 are only represented by percentile ranks from 1-15. This means there is a limited range between percentile ranks for conducting analysis and measurement. Therefore I chose to use their raw scores to determine whether there was any significant differences between the two groups. In addition, I was able to use only those subjects who completed the course and took the post-tests. In the teacher-paced group, only 22 of the original 36 students completed the course. Of those students in the student-paced group, only 17 of the original 36 students finished. With these remaining subjects, I conducted a "t" test for uncorrelated measures. This analysis indicated that the students in the teacher-paced group achieved a mean raw score on the post-tests of 55.31, whereas, the students in the student-paced group achieved a mean raw score on the post-tests of 50.58. The teacher-paced students, therefore, out performed those in the student-paced group; however, this difference was not statistically significant at the .05 level ($t = 1.08$, $df = 37$, $p > .05$. See Table 3:1).

TABLE 3:1

HYPOTHESIS: TEACHER-PACED GROUP WILL SCORE SIGNIFICANTLY HIGHER THAN THE STUDENT-PACED GROUP IN THE NELSON-DENNY READING POST TEST SCORES

| | Teacher-Paced Group | Student-Paced Group |
|---|---|---|
| No. of Subjects | 22 | 17 |
| Mean Scores | 55.31 | 50.58 |
| "t" Tests Results | $t = 1.08$, $df = 37$, $p > .05$ | |

"t" Tests on the Final Grade in EN 100 Course

In terms of the grades the students earned in the EN 100 course, it was hypothesized that there would be a statistically significant difference in achievement between the students in the teacher-paced group and the students in the student-paced group, with the teacher-paced students achieving at the .05 level. Here again I could only use those students who completed the course and received a grade. Therefore, this meant I could consider only 22 of the 36 students from the teacher-paced group and 17 of 36 from the student-paced group. In addition, this meant that these students were not necessarily matched pairs, and I had to use a "t" test for uncorrelated measures. An

analysis of grades achieved at the end of the first semester by those students who completed the one semester course indicated that students from the student-paced group achieved an average of 89.93 while the students from the teacher-paced group achieved a 92.89 average. Further, a "t" test for uncorrelated measures conducted on these means indicated that the difference was statistically significant at the .05 level ($t = 2.19$, $df = 37$, $p < .02$. See Table 3:2).

TABLE 3:2

HYPOTHESIS: TEACHER-PACED GROUP WILL ACHIEVE A HIGHER MEAN GRADE IN THE EN 100 COURSE THAN THE STUDENT-PACED GROUP

| | Teacher-Paced Group | Student-Paced Group |
|---|---|---|
| No. of Subjects | 22 | 17 |
| Mean Scores | 92.89 | 89.93 |
| "t" Tests Results | $t = 2.19$, $df = 37$, $p < .02$ | |

"t" Tests on (Q.P.A.) at End of First Semester

The next area under consideration was the student's quality point average (Q.P.A.) in all subjects at the end

of the student's first semester. Here, it was hypothesized that the students in the teacher-paced group would out perform to a statistically significant level the students who paced themselves as it related to the students' mean Q.P.A. In this area, I ran into additional complications. It seems that some of the students in this study did not complete the EN 100 course; however, they did remain in other courses. Therefore, any of the subjects in this study who remained in school at the end of the first semester even though they may not have completed the EN 100 course were included in this analysis. This meant of the 36 students in each group, 25 subjects from the student-paced group and 29 subjects from the teacher-paced group were still in school at the end of the first semester. Consequently, there were 54 subjects in the analysis of Q.P.A.'s at the end of the first semester. This analysis indicated that subjects in the student-paced group achieved an average Q.P.A. of 2.39 compared with subjects in the teacher-paced group who achieved an average of 2.88. A "t" test for uncorrelated measures conducted on these means indicated that this difference was statistically significant at the .05 level ($t = 2.08$, $df = 52$, $p < .02$. See Table 3.3).

TABLE 3:3

HYPOTHESIS: TEACHER-PACED GROUP WILL ACHIEVE A HIGHER MEAN Q.P.A. IN ALL COURSES AT THE END OF THE FIRST SEMESTER THAN THE STUDENT-PACED GROUP

| | Teacher-Paced Group | Student-Paced Group |
|---|---|---|
| No. of Subjects | 29 | 25 |
| Mean Scores | 2.88 | 2.39 |
| "t" Tests Results | $t = 2.08$, $df = 52$, $p < .02$ | |

Standard Error of a Proportion Test on Completion Rate in the EN 100 Course

It was also hypothesized that more students from the teacher-paced group than from the student-paced group would satisfactorily complete the EN 100 course, and this would be achieved at a statistically significant level.

As indicated earlier, because I was not dealing with assessing means, I could not use a "t" test to measure this data. I had to use a test that would measure data in ratio form, therefore, I chose the standard error of a proportion test as indicated in the following formula:

$$Z = \frac{P - \pi}{\sqrt{\pi\ (1-\pi)\ 1N}}$$

Where

p = proportion observed in the sample

$\pi$ = hypothesized value of the population proportion

N = number of subjects in the sample

The denominator of this formula, $\sqrt{\pi\ (1-\pi)\ 1N}$, is the standard error of a proportion, symbolized by Op. (Welkowitz et al., 1982, p. 145)

In order to determine the significance of the difference between percentages of students passing the course working under each of the two conditions, I calculated the standard error of the proportions. The percentage of students passing the course working under each of the conditions was compared to a hypothesized value of the population proportion which was determined by calculating the number of students who passed the English Communication Skills class with different instructors who were not using the experimental procedures as previously described. The resulting data indicated that with respect to the student-paced condition, the percent passing, 47% (17 out of 36 students) was not significantly different from those passing in other sections of this same course ($Z = .03$, $p > .05$).

With respect to the teacher-paced group which although the percent passing (61%) was substantially different from the hypothesized population proportion (50%), this difference was not large enough to be statistically significant ($Z = 1.27$, $p > .05$). In other words, there was no statistically significant difference in the number of students completing the EN 100 course amongst those students taking it while working under the student-paced condition or the teacher-paced condition or in any of the ways it was being taught at that time.

## Standard Error of a Proportion Test on the Completion Rate Over Four Semesters

In this study, it was further hypothesized that there would be a significant difference in the number of students who satisfactorily completed the EN 100 course and four consecutive semesters of course work between the students who were teacher-paced and those who paced themselves, with the former achieving at a statistically significant level.

In order to determine the significance of the differences between percentages of teacher-paced and student-paced students who satisfactorily completed four consecutive semesters of course work, I calculated the standard

error of the proportions. The proportion of those in each group who satisfactorily completed four semesters was compared to a hypothesized value of the population proportion. This I determined by calculating the number of students who were not in the sample group but who had been in other sections of the EN 100 course taught by other instructors not using the experimental designs here described. The resulting data indicated that the percentage of subjects in the student-paced group who paced themselves and who completed four semesters was not significantly different from the percentage of those who had studies with other instructors ($Z = 1.86$, $p > .05$). With respect to the teacher-paced group, there was also no significant difference between them and the hypothesized proportion ($Z = .46$, $p > .05$). Therefore, there was no significant difference between the students in the teacher-paced group and those who were in the student-paced group as compared to their respective hypothesized group.

## Non-Statistical Investigation

Another avenue pursued in this investigation to compare the effects of student-pacing versus teacher-pacing on high risk students at Quinsigamond Community College was interviewing. Before beginning the process of inter-

viewing, I submitted to the Human Subjects Review Committee at the University of Massachusetts in Amherst, Massachusetts, the permission form I would ask the student to sign which indicated that the interviewee's confidentiality would be preserved and that the interviewee could terminate the interview at any time (See Appendix B). I also obtained the committee's approval of the interview schedule I planned to use.

After receiving this approval, I randomly selected four students from the teacher-paced group and four from the student-paced group. To accomplish this, I used a systematic random sampling procedure. I arranged my subjects from both groups in matched pairs according to sex, age, and pre-reading percentile rank. Then I assigned each subject a number and using a table of random numbers (McCall, 1970, pp. 378-379), I selected four subjects from each group. Fortunately, community college students tend to stay within their home area after graduation, and I was able to find and interview all of them. Prior to conducting these interviews, I made clear to the interviewees who I was, the purpose of the study, and that I was working under the auspices of the University of Massachusetts. Further, I indicated that the interviewee's confidentiality would be preserved, and the interviewee could terminate at any time. In addition, I had the interviewee sign a statement indi-

cating he understood the above mentioned Appendix B. I used a semi-structured interview schedule (Appendix C). In other words, I asked all the interviewees the same questions, in the same order, and in the same manner. In addition, on each of the questions which allowed for comment, I asked the interviewees for reasons for their various responses. Like the empirical data I gathered, these interviews were aimed at ascertaining some of the reasons behind a student's success or failure while working under either the student-paced or teacher-paced condition. These interviews took place in various locations from my office at Quinsigamond Community College to a local restaurant where one of the interviewees could see me only during her lunch hour.

The interviewees' individual characteristics and their responses are summarized in Appendix D for the students in the teacher-paced group and in Appendix E for students from the student-paced group. They will be discussed more fully in the following chapter.

# CHAPTER IV

# DISCUSSION OF FINDINGS

## Overview

In this chapter, I will discuss not only the statistical analysis but also the results of the interviews. I plan to discuss first those hypotheses that proved statistically non-significant and then proceed to the ones that were. While discussing the statistical data, I will relate the interviewees' responses and reactions to the questions asked them from the interview schedule (See Appendix C).

I chose the interview schedule format because it

> Is a questionnaire that is read to the respondents. Compared with the population that is researched through the use of a questionnaire, the population for research relying on an interview schedule is not as restricted . . . though the sample must usually be restricted in the sense of being much smaller. . . . Furthermore, the meanings of troublesome questions can be explained to respondents, and interviewers can probe deeply into any questions (Labovitz and Hagedorn, 1976, pp. 74-75).

These interviews were conducted in an attempt to ascertain a more in-depth analysis of why students benefitted or not from either of the treatments in this study. This became extremely helpful while deliberating upon whether a particular finding was statistically significant

or not.

## Standard Error of a Proportion Test on the Completion Rate Over Four Semesters

One of the hypothesis that fell into the non-significant category stated there would be a significant difference in the number of students who would satisfactorily complete the EN 100 course and four consecutive semesters at Quinsigamond Community College between the teacher-paced group and the student-paced group with the teacher-paced students accomplishing this at a statistically significant level. As the findings indicated, there was no statistically significant difference between the two groups in this area, and had it not been for the interviews that I had conducted, I would have concurred with the finding without further discussion. However, the interviewees from both the teacher-paced group and the student-paced group unanimously agreed that the course did in fact help them in other courses after the first semester. This was summarized rather well by one of the interviewees from the teacher-paced group:

> I found this course very helpful for me in other courses because many of the skills I developed in the course were needed in other courses. It was also helpful because the positive experience I had developed in this course toward school and learning, I carried into my other courses.

The above perception was indicative of the other three interviewees from the teacher-paced group.

An interesting development here is that the interviewees from the student-paced group indicated they also felt that the way this course was conducted helped them in other courses after the first semester. This seems rather contradictory. However, in retrospect, I think some of the interviewees might have confused the way the course was taught with what was taught in the course. In any event, for one treatment to have an effect over four semesters is difficult to measure effectively.

## Number of Students Satisfactorily Completing the EN 100 Course

The next hypothesis I am going to discuss stated that more students from the teacher-paced group than from the student-paced group would complete the EN 100 course to a statistically significant degree. The data indicates that with respect to the teacher-paced group which although the percent passing, 61% was substantially different from the hypothesized population proportion (50%), this difference was not large enough to be statistically significant. With respect to the student-paced group, the percent passing, 47% was not significantly different from those passing

in other courses.

Here it should be noted that two thirds of the teacher-paced students completed the course versus less than fifty percent of those who paced themselves. Although this was not statistically significant, it does suggest that the teacher-paced students did fare somewhat better in this area.

The interviewees from the teacher-paced group indicated unanimously that they felt the way this course was conducted helped them more than any other English course they had taken. On the other hand, three of the four interviewees from the student-paced group pointed out that they felt the student-pacing was not as helpful. These views suggest a preference for teacher-pacing.

## Nelson-Denny Reading Post Tests

The next hypothesis I will discuss maintained that there would be a statistically significant difference between the teacher-paced students and those who paced themselves on the Nelson-Denny Reading post-test. I hypothesized that the teacher-paced students would out perform those who paced themselves. As indicated in the results section, the subjects in the teacher-paced group did

achieve a higher average score on the post test on the Nelson-Denny Reading test than did those students in the student-paced group, but this difference proved statistically non-significant. However, when one considers the results of the interviews especially the answers to the question "Did you find that the manner in which this English course was conducted helped you to do your work in that course better than any other English courses you had been in?", one gains further insight into this situation. For instance, three of the four students who were interviewed from the student-paced group indicated they did not find this course as beneficial as other English courses they had taken presumably in the traditional mode. One of those students who did not like the manner in which the student-paced class was run indicated that

> I realized while taking this course that I have a tendency to put things off. Also, I realized that I was not as disciplined as I thought I was. In addition, I found I got behind easier in this course than in others, and it became discouraging to have to try to always force myself to catch up on my work.

Considering the above comment indicative of those students who disapproved of the self-paced mode of their group, we begin to gain additional insight into this question. We begin to see why something that appears to be sound in theory may falter in practice. In other words, self-pacing seems as though it would have great student

appeal because a student could work at his own pace and proceed according to his own rate of learning. However, because most students have many demands upon their time, they often do not make judicious use of non-directive, unstructured learning. This is probably especially so with high-risk students. All the interviewees in the teacher-paced group indicated they would rather participate in a course that is teacher-paced.

If we look at the responses to another question from the interview schedule, "Do you prefer participating in the learning situation where you determine the pace at which you learn?", we have additional light shed upon this particular aspect of the study. Here, it is important to point out that the interviewees split on a 2-2 basis on this question. One of those who was in favor of student pacing from the student-paced group said, "I prefer setting the pace myself because then I don't have to worry about rushing my work and doing less than an adequate job on it." This, after all, is what many who support student-pacing would point to as the main reason for student-pacing's appeal. This point was further supported by two of the interviewees from the teacher-paced group who indicated support for student-pacing "I would feel less pressure and I could devote all my time to my work and do the best job on it that I could."

Another view of the impact of student-pacing was cited by one of the interviewees from the student-paced group who said that "I work better when I am pushed." This suggests support for the point made earlier that students tend to respond better to instructor-set guidelines than to the ones they set for themselves. This was further supported by an interviewee from the teacher-paced group who indicated that "I feel I work more efficiently in a situation that is more directive; that is, if someone is setting deadlines and goals for me, I work better.

## Final Grades in the EN 100 Course

The next hypothesis I am going to discuss indicated that the teacher-paced students out performed the students who paced themselves at a statistically significant level.

This is further evidence to suggest that students, especially high-risk students, tend to benefit more from a teacher-paced situation than one in which they pace themselves. The interviews provided further support for this contention. For instance, to the question on the interview schedule ("Do you now prefer participating in a learning situation that has set time limits that you must adhere to?"), subjects from the student-paced group indicated that they did better in a learning situation with set time

limits, and this was also true of the students in the teacher-paced group. In fact, one of the interviewees from the teacher-paced group addressed this issue rather succinctly in her response to this question:

> It (meeting set time limits) helped me to better meet my goals and it showed me that to be successful in college one has to meet deadlines. Further, it showed me that I had to learn to budget my time in order to equally distribute it amongst the many demands put upon it.

Another comment by another interviewee from the same group supported this idea and brought in a rather interesting point when she stated:

> It (meeting set time limits) helps you avoid procrastination and it gives you a goal. When I first began college, I did not have any specific goals and if the instructor did not set deadlines for me, I would have been completely lost.

This interviewee raised the issue of not only the benefit of having deadlines set for her but also the danger of not having specific goals. This is an issue which is often overlooked when dealing with the high-risk student. The high-risk student often goes to college in pursuit of the "pot of gold" that is suppose to exist at the end of the educational rainbow. However, this broad goal is often too vague and distant to sustain him through the rigors of even a semester's work.

The relationship between having clear goals and being successful in college has been substantiated in seve-

ral major studies including the recent "College Student Attrition and Retention" report conducted by the Leonard Ramist for the College Entrance Examination Board, 1981. However, the issue of students preference of instruction should be looked at further here. In another study dealing with these concerns, when students were asked to chose from two options the method of instruction they preferred, 69% indicated they preferred the option: "The student will proceed at his own pace as determined by his ability to master specific tasks. This pace will vary from student to student" (Moten, 1977, p. 10). In this same study, 57 percent preferred "The student will have to meet certain requirements set by the instructor to maintain satisfactory progress in the course" (Moten, 1977, p. 11). Obviously, there is a degree of overlapping occurring here. Some of these students are saying they prefer self-pacing, but some of these same students are saying they prefer a learning situation whereby the instructor sets the pace. This dichotomy continues to emerge.

## Q.P.A.'s for the First Semester

The final hypothesis I am going to discuss also proved statistically significant. This hypothesis maintained that the teacher-paced students would to a statis-

tically significant level surpass the student-paced students in the overall quality point average (Q.P.A.) achieved in all courses they were enrolled in at the end of the first semester.

The fact that the teacher-paced students were superior in this area coupled with the interviewees comments further suggests the appropriateness of teacher-pacing for high risk students. For instance, the interviewees' responses to Question 10. (Did you find the manner in which this English course was conducted helped you in other courses you were taking at the time?), the respondents from the student-paced group indicated by a 3-1 margin that it did not help them. In fact, one of the students from the student-paced group indicated that because of the way this course was conducted, "I felt it tended to encourage me to put things off." Students in the teacher-paced group, however, indicated unanimously that teacher pacing was beneficial. This point was strongly made by one of them who stated:

> I felt the manner in which this course was conducted (teacher-paced) was helpful because it helped me to develop confidence through being able to meet deadlines within the safety of this course. This course allowed me to experiment with meeting the teacher's deadlines sometimes ahead of time and experience the positive effects of that. Also it allowed me to develop a pattern of working that was comfortable for me and that worked.

However, it is important to note that the one interviewee who felt that the student-pacing was beneficial indicated that "I felt it helped me to develop a better sense of discipline." Perhaps for those students who experience success through some kind of self-paced educational experience, the sense of achievement is greater and more meaningful.

Even though the student-pacing may prove meaningful for some, it seems that in the last analysis many students prefer the instructor assume the final responsibility for the instruction. This was substantiated by the interviewee from both groups who unanimously responded in the positive to the question (Do you now prefer to participate in a learning situation that is controlled by the instructor?) To illustrate this point further, the following comment by one of the interviewees from the student-paced group made an especially interesting comment:

> Generally I prefer this (instructor-control learning situation) because this is what I am used to, and I feel the teacher knows what he is doing. Therefore I feel more comfortable in this kind of a learning situation.

This same student indicated on a previous question that he preferred pacing himself in a learning situation. When he was asked about this contradiction, he became somewhat annoyed at my pointing this out. But in the final analysis, he admitted that "I did not know why I felt like this, but

I did." He suggested that what he prefers is a learning situation that he can pace himself to some degree but that the instructor has the final control. This contradiction was repeated by four of the eight interviewees who said they preferred both self-pacing and teacher-pacing.

Here again this dichotomy emerges whereby students want many of the characteristics of individualized instruction, but in the final analysis, they want the instructor to shoulder the responsibility for seeing to it that they meet the deadlines and requirements of the course.

Let us look at a study by Donald L. Alderman who arrived at a similar conclusion. Alderman evaluated a MITRE Computer Corporation's attempt to design, implement, and demonstrate the effectiveness of a low cost, large scaled computer assisted instruction program. In order to do this, the MITRE Company installed 120 time sharing terminals with monitors that had capabilities of television receivers in two community colleges. In the Fall of 1975, they began the TICCIT Program, "a computer-assisted instructional system that combines the strengths of minicomputers with the display capabilities of television receivers" (Aldeman, 1978, p. 6). The program involved over 5,000 students in 200 sections of introductory English and Math courses. This study lasted over two years and resulted in comparative measures of student achievement,

course completion rates, and faculty and student affective responses in the TICCIT Program and in a traditional lecture-type class. It should be noted that the students in the TICCIT Program were permitted to exercise control over their instruction. They were able to pace themselves, choose their instructional sequence, and choose the level of difficulty of the material.

One of the conclusions reached from this evaluation was that the students in the TICCIT Program had a significantly lower course completion rate than did the students who received traditional style instruction.

> Despite the improved student achievement and sometimes favorable student attitudes made possible by the TICCIT program, there were dramatic decreases in course completion rates. This may reflect a generic problem with self-paced instruction in that students unable to manage their own learning fail to satisfy course requirements. Such students constitute a sizeable percentage of the total enrollment at community colleges. If the TICCIT program continues at community colleges, there should be careful monitoring of student attendance and explicit incentives for steady course progress. Regular contact with instructors outside of sessions on the TICCIT system and small group discussions may also provide additional student motivation and thereby improve course completion rates (Alderman, 1978, p. 16).

In this study, one of the courses in fundamentals of English composition in which the instructor took an active role in the learning process, the results were positive (Alderman, 1978, p. 12). In other words, when the instructor took an active role in directing the instruction,

the results tended to be positive.

As suggested earlier, this seems to concur with what has been found by others. For instance as long as ten years ago, Connally and Sepe found in a study they conducted comparing the traditional lecture discussion model with an individualized model of instruction that:

> When given the choice between singular characteristics of the individualized and the traditional models, the sample chose the former in all cases but one. Respondents prefereed the traditional characteristic of teacher control of the learning situation to the individualized characteristic of learner control. In other words, the majority of students preferred all the characteristics of individualized instruction except having the responsibility for learning placed on them (Connally and Sepe, p. 116).

Perhaps what this suggests is that a paradigm that allows students to pace themselves within smaller time frames than a whole semester with a teacher having final control may be more beneficial for high-risk students at the community college level.

## Summary

From this study comparing the effects of teacher-pacing with self-pacing upon high-risk students at the community college level, it would be difficult to state categorically that one or the other form is superior. Certainly, we have gained from the statistical analysis of this study

as well as from the interviews an indication that the teacher-pacing is probably more appropriate for the high-risk students. From other studies cited, we have seen further evidence to support this. However, it is important to note that in most studies dealing with this area, it has been found that teacher-pacing has not necessarily been superior.

Although all of the analysis conducted showed that the teacher-paced group was superior to the student-paced group to some degree, the teacher-paced group was only statistically superior in two of the areas under consideration. The areas that the teacher-paced group indicated a statistically significant difference over the student-paced group were in the mean grade achieved in the EN 100 course and in the overall grade point average achieved at the end of the first semester in all of the courses taken that semester. Because I found only these two areas showed a statistically significant difference, any extrapolation from these findings to suggest that teacher-pacing is superior to student-pacing with high risk students at the community college level must be made with caution.

# C H A P T E R V

# CONCLUSIONS, RECOMMENDATIONS, AND IMPLICATIONS

## Overview

This chapter will present the conclusions reached in this study as well as recommendations for future studies dealing with high-risk students at the community college level. In addition, I will consider implications for future research in this area.

The purpose of this study was to measure and compare the effects of self-pacing versus teacher-pacing in a developmental/remedial basic skills course entitled EN 100 English Communication Skills. The course employed an individualized modified audio/tutorial modularized approach and was offered to entering freshmen at Quinsigamond Community College.

It is important at this time to make clear one distinction being made in this study: I am not comparing the traditional lecture/discussion method with individualized instruction. This battle has been fought and although there has been no clear winner, individualized instruction at least has won its place within the spectrum of effective learning methodologies. As one study points

out, "The fact that only 50 percent of the students sampled selected the individualized model should not comfort its opponents. It suggests that at least half of our students prefer it to a traditional approach" (Connally and Sepe, 1972, p. 20).

Having clarified this point, I will discuss the conclusions reached in this study. When I began this study, I suspected that the students in the teacher-paced group would achieve at a superior level to the students in the student-paced group. Although I suspected this, inwardly I hoped that the students in the student-paced group would do better. I was surprised by the results.

To test my main hypothesis, namely that the students in the teacher-paced group would show a significantly better performance than the students in the student-paced group, I calculated by means of "t" tests three sets of scores for students working with the teacher-paced group and the students-paced group: scores in achievement on the post-test of the standardized reading tests; end of the semester final grades in the EN 100 course; and overall final grade point averages achieved during this semester. In addition, I compared the difference between the proportions of the two groups who satisfactorily completed the EN 100 course. Also, I conducted the same test on those from the two groups who went on to complete four consecutive

semesters.

## Conclusions

In terms of the students' achievement on the Nelson-Denny Reading Tests, there was no significant difference. In this area, I strongly suspected that the teacher-paced students would out perform the students in the student-paced group. However, the study forces me to conclude that for improving reading performance teacher-pacing is not significantly better than student-pacing for high-risk students at the community college level.

The second conclusion that can be drawn from this study concerns the students' achievement in the EN 100 course. Here my suspicion was justified because I found that the teacher-paced students achieved an average grade in the EN 100 course that was higher and to a statistically significant degree than that achieved by the students who paced themselves. Here I concluded that teacher-pacing has a positive short term effect.

A third conclusion reached by this study is that high-risk students who are teacher-paced tend to achieve a higher quality point average in the first semester than high-risk students who are student-paced. Here again my suspicion was justified.

A fourth conclusion I reached from this study is that teacher-paced and student-paced students completed the EN 100 course with equal facility. I found this rather startling because I felt with the teacher's guidance and direction, more students would complete the course than those who paced themselves. Hopefully, this will be an area that will be looked at more carefully in future studies.

The final conclusion suggested in this study is that there are no long term effects of pacing over a four semester period. In this area, I was somewhat reluctant to draw a conclusion because it is somewhat doubtful that one treatment can have an effect over this long a period of time.

## Recommendations for Future Research

After conducting this study and reading others on the appropriateness of allowing high-risk students at the community college level to self-pace themselves through a semester's time or longer, it has become clear to me that this educational practice needs to be carefully monitored in the future. The findings of this study indicate that self-pacing, at least with high-risk students, needs to

be examined further to determine whether it is sound pedagogy or not. Perhaps the use of additional standardized tests to the Nelson-Denny may yield a clearer understanding of the ability of high risk students to pace their own learning. More definitive information certainly could be obtained by replicating this study on a larger sample. In fact, any extrapolation from this data should be done with caution because of the study's limited sample size.

The main issue explored in this study is not individualized instruction, which has a well established track record, but the question of who should assume the responsibility for determining the pace at which the student should move through the material to be learned. The typical high risk student at the community college level is usually encumbered by a weak educational background, limited financial resources, and unclear career goals. To expect this student to know what goals he should set for himself within a given course, to know how to achieve these goals within a given time frame, and to know when he has satisfactorily achieved these goals within the anticipated time frame is probably to expect too much.

It seems more reasonable to expect that the high risk student needs an instructor who will play a more integral role in his education. In fact, this student, more than most, needs someone in the classroom and/or laboratory who

will be there to direct, to prod, to support, to clarify, and even to applaud when it is appropriate. In other words, many students and certainly the high risk student may not just benefit from but may desperately need the guiding hand of an instructor.

In addition, more research needs to be conducted on the major interacting variables that are present in learning situations designed for high risk students. One such variable that continues to surface as more and more research findings become available on it is the role of cognitive learning styles.

## Implications

One exciting and recently rediscovered area that needs researching is the area of cognitive styles and the role they play in learning. The term cognitive styles generally refers to the ways different people go about acquiring knowledge or processing information. The fact that some people learn better in one way than another is not new in the annals of research. As a matter of fact, research on cognitive styles has been going on for approximately twenty-five years in psychology laboratories. However, as one researcher observed, there has been limited

communication between researchers and educational practitioners

> Almost total lack of articulation . . . between the psychological study of cognition, on the one hand, and educational research and practice, on the other. Cognition, after all, refers to the process by which knowledge is acquired: perception, memory, thinking, and imagery - and one might have anticipated a long-term and fruitful association between psychological research and the world of education (Kogan, 1971, p. 243).

This situation as described by Kogan is unfortunate when one considers the potential influence knowledge of cognitive styles could have upon teacher-student relationship in learning. "Cognitive style is a potent variable in students' academic choices and vocational preferences; in students' academic development through their school career; in how students learn and teachers teach; and in how students and teachers interact in the classroom (Witkin, 1973, p. 1). Some researchers and practitioners have begun to recognize how powerful this variable is in effecting dynamic positive changes in education (Witkin, Moore, and others, 1975), as they and others have been examining the implications of cognitive styles in an educational setting.

There are at least a dozen separate cognitive dimensions, and for purposes of this study it is important to consider at least the nine major ones Messick & Associates

(1970, pp. 188-9) cite

1. Field independence versus field dependence - "an analytical, in contrast to a global, way of perceiving (which) entails a tendency to experience items as descrete from their backgrounds and reflects ability to overcome the influence of an embedding context (Witkin, Dyk, others, 1962).

2. Scanning - a dimension of individual differences in the extensiveness and intensity of attention deployment, leading to individual variations in vividness of experience and the span of awareness (Holzman, 1966; Schlesinger, 1954; Gardner and Long, 1962).

3. Breadth of categorizing - consistent preferences for broad inclusiveness, as opposed to narrow exclusiveness, in establishing the acceptable range for specified categories (Pettigrew, 1958; Bruner and Taifel, 1961; Kogan and Wallach, 1964).

4. Conceptualizing styles - individual differences in the tendency to categorize perceived similarities and differences among stimuli in terms of many differentiated concepts, which is a dimension called conceptual differentiation (Gardner and Schoen, 1962; Messick and Kogan, 1963), as well as consistencies in the utilization of particular conceptualizing approaches as bases for forming concepts - such as the routine use in concept formation of thematic or functional relations among stimuli as opposed to the analysis of descriptive attributes or the inference of class membership (Kagan, Moss, and Sigel, 1960, 1963).

5. Cognitive complexity versus simplicity - individual differences in the tendency to construe the world, and particularly the world of social behavior, in a multidimensional and discriminating way (Kelly, 1955; Bieri, 1961 and others, 1966; Scott, 1963; Harvey, Hunt, and Schroder, 1961).

6. Reflectiveness versus impulsivity - individual consistencies in the speed with which hypotheses are selected and information processed, with impulsive subjects tending to offer the first answer that occurs to them, even though it is frequently

incorrect, and reflective subjects tending to ponder various possibilities before deciding (Kagan, Rosman, and others, 1964; Kagan, 1965).

7. Leveling versus sharpening - reliable individual variations in assimilation in memory. Subjects at the leveling extreme tend to blur similar memories and to merge perceived objects or events with similar but not identical events recalled from previous experience. Sharpeners, at the other extreme, are less prone to confuse similar objects and, by contrast, may even judge the present to be less similar to the past than is actually the case (Holzman, 1954; Holzman and Klein, 1954; Gardner, Holzman, and others, 1959).

8. Constricted versus flexible control - individual differences in susceptibility to distraction and cognitive interference (Klein, 1954; Gardner, Holzman, and others, 1959).

9. Tolerance for incongruous or unrealistic experiences - a dimension of differential willingness to accept perceptions at variance with conventional experience (Klein, Gardner, and Schlesinger, 1962).

Of the nine major cognitive styles Messick describes above the field-dependent versus field-independent dimension has been the most extensively investigated, particularly for its implications for education.

Perhaps the easiest way to understand the difference between field-dependence and field-independence is to see how individual differences are identified along this dimension. In the early stages of testing for cognitive styles, the rod and frame test was used. This is a test conducted in

a completely darkened room. All the subject can see is a square frame and a rod, both coated with luminous paint. This frame or rod can be rotated either clockwise or counter clockwise. The subject is asked if the rod is upright, and if it is not, to adjust it to an upright position relative to the room. One should keep in mind that the frame may be off center, but the subject is asked to adjust the rod to the upright position. People doing this tend either to adjust the rod relative to the frame (field-dependent people) or to adjust the rod relative to the room (field-independent people). Another similar laboratory test is the Body-Adjustment Test. In this test:

> The apparatus . . . consists of a small room containing a chair. Room and chair can be tilted clockwise or counter clockwise, together or independently of each other. At the outset of each trial, the subject's chair and the room are brought to prepared tilted positions, and the subjects task is to adjust his body to an upright position (Messick & Associates, 1978, p. 40).

Obviously, laboratory tests of this sort are time consuming and cumbersome to administer. Consequently, Witkin and others developed the Embedded Figures Test (EFT) which is essentially a pen and paper test that taps a person's tendency to be either field-dependent or field-independent (Witkin et al, 1971). Messick clarifies this by saying: "In the Embedded Figures Test, the subject's score is the time taken to locate the simple figure in the complex design. In all three situations, we come out with a

quantitative indicator of the extent to which the subject's perception of an item has been influenced by the organized field surrounding it" (Messick & Associates, 1978, p. 41). From the Frame and Rod test, the Embedded Figures Test and others, it has been found "At one extreme of the performance range, perception is strongly dominated by the prevailing field; we speak of this mode of perception as field dependent. At the other extreme, the perception of an item is relatively independent of the surrounding field, and we refer to this mode of perception as field independent" (Messick & Associates, 1978, p. 42).

Let us look at other distinctions made between the field-dependent and field-independent person to get a better understanding of this cognitive dimension. "The field-independent person consistently approaches a wide variety of tasks and situations in an analytical way, separating elements from background. The field-dependent individual approaches situations in a global way, seeing the whole instead of the parts" (Cross, 1976, p. 117). Another aspect to consider is that "In forming their attitudes on an issue, field-dependent persons are especially prone to be guided by the positions attributed to an authority figure or peer group (Bell, 1964; Deever, 1968, Linton and Graham, (1959). Reflecting their use of external sources of information for self-definition, field-dependent persons are

selectively attentive to the human content of the environment (Messick & Associates, 1978, p. 44). However, the opposite is true of the field-independent person who learns better on his own.

Interest in the field-dependent versus the field-independent dimension has increased in recent years as it relates to high risk students at the community college level. There are many similarities between the high risk students or "new students," as Patricia K. Cross refers to them, and field-dependent students as Table 5:1 indicates:

TABLE 5:1

SOME CHARACTERISTICS OF FIELD DEPENDENTS AND NEW STUDENTS

| Field Dependents | New Students |
|---|---|
| Like being with and relating to people. Well-developed social sensitivity. | Spend leisure time with people. Report most important college learning experiences relate to getting along with others. |
| Attracted to careers and college majors emphasizing interpersonal relations. | Attracted to careers working with people. |
| Sensitive to the judgments of others. Tend to be guided by authority figures. Dependent on others for self-definition. Lack independence and autonomy. | Low scores on tests of autonomy, measuring independence of thought and judgment. Compliant to wishes and ideas of those in authority. |
| Extrinsically motivated; responsive to social reinforcement. | Motivation for education is extrinsic; high interest in grades, better jobs, higher salaries. |

TABLE 5:1 - Continued

| Field Dependents | New Students |
|---|---|
| Poor at analytical problem solving. | Low scores on Theoretical Orientation (TO) scales of OPI (Omnibus Personality Inventory), a scale measuring preference for analytical and critical thinking. |
| Favor a "spectator approach" to concept attainment. Tend to accept problems as defined by others rather than impose their own structure. | Score low (are more passive) than traditional students on the OPI Active-Passive scale. Tend to accept situations as defined by others. |
| Field-dependent women favor traditional women's roles | Career choices are strongly sex stereotyped. |
| Come from social and cultural backgrounds stressing obedience to authority and "tight" role definitions. | Come from blue-collar families. Favor traditional social values and respect for authority. |

(Cross, 1976, p. 123).

Even though the evidence is not conclusive as to the connection between "new" or high risk students and field-dependent students, there is sufficient evidence to suggest the possibility that field-dependent students are probably over represented at the community college level (Witkin, 1973; Witkin and Moore, 1974; and Witkin, Moore, et al., 1975). This conjecture leads to at least one interesting possibility:

> It is possible, however, that the learning difficulties of field dependents may be more a function of the way learning is structured in the schools than of the intelligence of the learner. School learning may favor field-independent children, who tend to be task and achievement oriented and to be self-sufficient and independent; field dependents may be easily distracted because they find the people around them more interesting than the mathematics problem in front of them (Cross, 1976, pp. 121-122).

If we suspect that many high risk students are disproportionately field-dependent, we should consider "the repeated observation that children with learning difficulties, especially in the area of reading, tend to be field-dependent" (Messick & Associates, 1978, p. 62).

It would seem, then, that there is some relationship between students who are field-dependent and students who have difficulty in school. One solution to this problem may be to match field dependent students with field dependent teachers. Then if we place them both in a learning situation that is conducive to their common cognitive style, we might provide a winning combination. There have been, however, some concerns raised about this matching strategy.

> The simplicity of the "matching" concept is more likely to trouble research psychologists. In the first place, they may question the assumption that it is desirable to place students in learning

> environments geared to their predilections. In the second place, they may question the assumption that the student's profile remains constant and that the institution's resources are infinitely flexible. For example, if we know that a field independent learns best and most pleasantly in independent study, are we necessarily serving him well if we offer him a steady diet of independent work? Maybe he needs to learn to work cooperatively with others. "Matching" him to his own style or preference may push him toward further field independence and that may be maladaptive in certain social situations (Cross, 1976, p. 126).

In other words, by matching a student to a teacher and a particular mode of instruction, we may better enable a student to learn a particular subject more easily, but by doing this are we contributing to his overall ability to live in an increasingly complex world that often calls for a variety of cognitive styles? This, indeed, might be a problem but only if we were to develop a total college curriculum which matched students, instructors, and instructional modes. However, my concern in this study is only for high risk students and how they can acquire the skills they need to function at the community college level.

As a result of this study, I have become reconvinced that there is no one teaching practice that is best for all students or even most students. "Psycholo-

gists are now asking the more sophisticated interaction questions about learning styles - which methods work for which students?" (Cross, 1976, p. 112). This point is reinforced by others in the field. "Research concerning the conditions of learning, retention, and transfer as they interact with individual differences must be stepped up greatly" (Messick & Associates, 1978, p. 32). Cross's work points to the serious need for more research in this area and to the complexity of the task that lies ahead for us:

> While it seems probable that field-dependent students are overrepresented in the New Student group, more study is needed on the relationship between cognitive style and academic success under various conditions. It seems appropriate, however, to take a speculative look at how our educational approaches might affect students of different cognitive styles. My hypothesis is that traditional education favors the field independent and that it is no accident or mere coincidence that students who do not do well in school have some important characteristics in common with field dependents. It is possible that field dependents find themselves in less hospitable learning environments than field independents (Cross, p. 124).

Incomplete as they are, the findings on cognitive styles shed some light on the results of my study. My own primary concern was with the pacing variable. As I have indicated, I had suspected that teacher-paced students

would out perform those who paced themselves to a statistically significant degree. This prediction proved accurate with two of my five hypotheses. The teacher-paced students also showed non-significant though better performance in keeping with two additional hypotheses. Although the results suggest that teacher-pacing is a superior instructional mode, the finding is not conclusive, and I feel that pacing as a variable should continue to be considered in future studies of high risk student performance.

In future investigations, I would also suggest a serious look at the role of field-dependence versus field-independence as it relates to the performance of high risk students at the community college level. We should especially consider, "that field-dependent students generally are more easily reinforced by external evaluation (grades, praise, criticism), whereas field independents are less influenced by the rewards of their social surroundings" (Witkin, 1973). Therefore, in future investigations dealing with field-dependent students, we would want to build in external evaluation.

Further, we should also look at the fact "that relatively dependent students prefer clear directions and

instructor responsibility for their own learning; similarly, field dependents are less likely than field-independents to do well in organizaing their own learning materials" (Witkin and Moore, 1974, p. 10). Therefore, in any future study, clear directions, teacher control, and organized learning material should be carefully examined.

Many of the elements in the teacher-paced instructional mode in my study are similar to those I have cited regarding the field-dependent student. The one element missing and that which I now strongly recommend for instructing field dependent students is a provision for human interaction in the form of small group projects and activities. This element was not entirely missing for students in the student-paced group because they often sought each other out to discuss how much they should be doing on their own. Perhaps, this is why the student-paced students did as well as they did.

The field-dependence/field-independence variable is, I am convinced, one that needs serious consideration in future studies as they relate to high risk students at the community college level. In considering future research, we must be careful not to overlook the research of the past.

In the 1950s, we witnessed some of B. F. Skinner's acolytes and proponents of programmed learning attempt to reduce and/or eliminate the need for an instructor in the educational process. Programmed learning's failure was caused by several major factors, but certainly a contributing factor was the assumption that the educational process could be captured in the S-R model. Through the 1960s and 1970s, we saw various innovative programs employing self-directed learning and independent study. The use of these approaches presumes that the student's inherent motivation is sufficient to compensate for all the missing dynamics provided by a teacher directed educational process.

Many experiments employing student self direction and development were conducted at this time. These experiments were prompted, in part, by the teachings of Carl Rogers, Abraham Maslow, Eric Fromm, and others. The basic hypothesis proposed by these people was that a person's natural drive will direct him towards self-actualization and growth. Further, they suggest that if a student is placed in an ideal learning environment, he will naturally pursue his studies efficiently and effectively.

In fact, there was a time when this was an integral part of my beliefs, and it was the basis for my student-pacing experiment with my students in 1977. It seems I had taken several courses at a local university that both

taught and employed the idea of self-actualization and growth, and I had had such a positive experience that I felt it was the cure for all the educational ills. I look back on this time with some incredulity because I had so totally embraced this idea at that time as being a panacea. Further, I felt that with this belief coupled with a carefully designed individualized program, I would have a very successful course. This belief was not uncommon for this period of time as has been noted by Connally and Sepe:

> Many educators have assumed all too simply that individualized instruction, packaging courses, and specifying behavioral objectives would be a panacea for the problems they face. Unfortunately, this has not been the case. Students reaction to a drastically modified learning environment which placed greater responsibility on them as learners, has not always been positive (Connally and Sepe, 1972, p. 20).

I have since come to realize that the learning process involves many interacting variables, and we must try to measure the effect of each of these variables upon each other and the student.

As we enter the 1980s and 1990s, we must heed the lessons of the past. This caveat becomes particularly poignant when we consider that micro-computers are now being lauded by many as being a panacea:

> First at a cautious trot and now at a breakneck gallop, our schools and colleges are moving toward the promised land of computers. From all the present evidence, however, the long-term educational results are likely to be minimal and

they could be catastrophic (Bonham, 1983, p. 72). With micro-computers being used more and more in the educational process, it is now possible to assess a student's educational needs and tailor and individualized program of study to meet those needs in such areas as reading, writing, and mathematics. Considering the affect this will have on individualized instruction and the subsequent pacing of that instruction, especially with high risk students, I become very concerned about how this new technology is going to be employed. When we consider the use of computers with high risk students at the community college level, we should remember some of the conclusions reached by Alderman in his evaluation of the TICCIT program mentioned earlier:

> The reasons behind the lower completion rates observed in TICCIT classes seem to stem from fundamental concepts of the program itself. Through learner control the TICCIT program shifted the emphasis in instruction from the computer teaching to the student learning. Students had to assume responsibility for their own learning. Other instructional conditions that allowed students to set their own pace for learning had also resulted in lower completion rates than lecture sections. This held for the audio-tutorial system that preceded the TICCIT program at one demonstration site and the programmed instruction that competed with the TICCIT program at a second demonstration site. The major factor behind the effects of the TICCIT program on course completion is probably a generic problem. Programs that allow each student to proceed at his or her own pace risk losing students unable to manage their own instruction (Alderman, 1978, p. 9).

In fact, Alderman went on to say that "The results of this evaluation suggests that the TICCIT program may be inappropriate for community colleges" (Alderman, 1978, p. 2).

Recognizing not only that the condition of learning involves a unique interaction amongst many variables but also that many of these variables can be identified and addressed in an educational setting is a cogent reminder of the many challenges that lie before us.

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# APPENDIX

APPENDIX A

SAMPLE SIZES of SUBJECTS in EACH CATEGORY

| YEAR | 1977 | | | | | | | | 1980 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SEX | Female | | | | Male | | | | Female | | | | Male | | | |
| AGE | 17-19 | | 20 or over | | 17-19 | | 20 or over | | 17-19 | | 20 or over | | 17-19 | | 20 or over | |
| READING %ILES | 0-6 | 7-14 | 0-6 | 7-14 | 0-6 | 7-14 | 0-6 | 7-14 | 0-6 | 7-14 | 0-6 | 7-14 | 0-6 | 7-14 | 0-6 | 7-14 |
| N | 7 | 7 | 8 | 4 | 6 | 2 | 6 | 1 | 7 | 9 | 7 | 6 | 3 | 5 | 5 | 5 |
| TOTALS | 14 | | 12 | | 8 | | 7 | | 16 | | 13 | | 8 | | 10 | |
| | 26 | | | | 15 | | | | 29 | | | | 18 | | | |
| | 41 | | | | | | | | 47 | | | | | | | |
| | 88 | | | | | | | | | | | | | | | |

# APPENDIX B

## Interview Format

I have consented to be interviewed by Professor James W. Brown from Quinsigamond Community College. I understand that Mr. Brown is a doctoral student at University of Massachusetts and that as part of his study, he is comparing the way students were taught English in the freshmen classes of 1977, and 1980 at Quinsigamond Community College. Further, I understand that my anonymity will be protected, and anything I say regarding this interview will remain confidential. In addition, I understand that I may terminate this interview at any time.

Date of Interview _____
Signature of Interviewee_____
Signature of Interviewer _____

Preliminary remarks to subjects:

The purpose of this interview, being conducted by James W. Brown, a doctoral student in the School of Education at the University of Massachusetts, is to determine the Significant factors related to students successful and/or unsuccessful completion of a freshman English course at Quinsigamond Community College. This course was conducted in two different ways. During the 1977 Fall semester, this course was conducted in such a way as to allow the student to determine the pace at which he would learn, Plan A; whereas, during the 1980 Fall semester, the teacher determined the pace at which

APPENDIX B (CONT.)

the student learned, Plan B.

# APPENDIX C

## INTERVIEW SCHEDULE

1. Sex - Male _____ Female _____
2. Age - 17-19 ____ 20 or over _____
3. Pre-Reading Percentile - 0-6 _____ 7-14 _____
4. QPA at the end of the first semester at Q.C.C.

   0-1.0 _____ 1.1-2.0 _____ 2.1-3.0 _____ 3.1-4.0 _____
5. Number of consecutive semesters spent at Q.C.C.

   1 _____ 2 _____ 3 _____ 4 _____
6. What year were you involved in the English Course?

   1977 _____ 1980 _____
7. QPA at the end of 4 semesters at Q.C.C.

   0-1.0 _____ 1.1-2.0 _____ 2.1-3.0 _____ 3.1-4.0 ____
8. Did you find that the manner in which this English course was conducted helped you to do your work in that course better than any other English courses you had been in?

   Yes _____ No _____ Any Comment:
9. Would you say that the way this course was conducted had any effect upon you beyond the first semester at Q.C.C.

   Yes _____ No _____ Any Comment:
10. Did you find the manner in which this English course was conducted helped you in other courses you were taking at the time?

    Yes _____ No _____ Any Comment:
11. Do you prefer participating in the learning situation

APPENDIX C (CONT.)

where you determine the pace at which you learn?

Yes _____ No _____ Any Comment:

12. Do you now prefer to participate in a learning situation that has set time limits that you must adhere to?

Yes _____ No _____ Any Comment:

13. Do you now prefer to participate in a learning situation that is controlled by the instructor?

Yes _____ No _____ Any Comment:

14. Would you rather participate in a learning situation in which the pace of learning is determined by the group you are in?

Yes _____ No _____ Any Comment:

# APPENDIX D

## INTERVIEW SCHEDULE

1. Sex - Male 1 Female 3

2. Age - 17-19 2 20 or over 2

3. Pre-Reading Percentile - 0-6 _____ 7-14 4

4. QPA at the end of the first semester at Q.C.C.

   0-1.0 _____ 1.1-2.0 _____ 2.1-3.0 3 3.1-4.0 1

5. Number of consecutive semesters spent at Q.C.C.

   1 1 2 _____ 3 _____ 4 3

6. What year were you involved in the English Course?

   1977 _____ 1980 _____

7. QPA at the end of 4 semesters at Q.C.C.

   0-1.0 _____ 1.1-2.0 _____ 2.1-3.0 1 3.1-4.0 2

8. Did you find that the manner in which this English course was conducted helped you to do your work in that course better than any other English courses you had been in?

   Yes 4 No 0 Any Comment:

9. Would you say that the way this course was conducted had any effect upon you beyond the first semester at Q.C.C.

   Yes 4 No 0 Any Comment:

10. Did you find the manner in which this English course was conducted helped you in other courses you were taking at the time?

    Yes 4 No 0 Any Comment:

11. Do you prefer participating in the learning situation

APPENDIX D (CONT.)

where you determine the pace at which you learn?

Yes 2 No 2 Any Comment:

12. Do you now prefer participating in a learning situation that has set time limits that you must adhere to?

Yes 4 No 0 Any Comment:

13. Do you now prefer to participate in a learning situation that is controlled by the instructor?

Yes 3 No 1 Any Comment:

14. Would you rather participate in a learning situation in which the pace of learning is determined by the group you are in?

Yes 1 No 3 Any Comment:

NOTE: These are the results from the subjects in the teacher-paced group.

# APPENDIX E

## INTERVIEW SCHEDULE

1. Sex - Male __2__ Female __2__

2. Age - 17-19 __3__ 20 or over __1__

3. Pre-Reading Percentile - 0-6 __2__ 7-14 __2__

4. QPA at the end of the first semester at Q.C.C.

   0-1.0 __1__ 1.1-2.0 _____ 2.1-3.0 __3__ 3.1-4.0 _____

5. Number of consecutive semesters spent at Q.C.C.

   1 __1__ 2 __1__ 3 _____ 4 __2__

6. What year were you involved in the English Course?

   1977 _____ 1980 _____

7. QPA at the end of 4 semesters at Q.C.C.

   0-1.0 _____ 1.1-2.0 _____ 2.1-3.0 __2__ 3.1-4.0 _____

8. Did you find that the manner in which this English course was conducted helped you to do your work in that course better than any other English courses you had been in?

   Yes __1__ No __3__ Any Comment:

9. Would you say that the way this course was conducted had any effect upon you beyond the first semester at Q.C.C.

   Yes __4__ No __0__ Any Comment:

10. Did you find the manner in which this English course was conducted helped you in other courses you were taking at the time?

    Yes __1__ No __3__ Any Comment:

11. Do you prefer participating in the learning situation where you determine the pace at which you learn?

APPENDIX E (CONT.)

Yes 1 No 3 Any Comment:

12. Do you now prefer participating in a learning situation that has set time limits that you must adhere to?

Yes 4 No 0 Any Comment:

13. Do you now prefer to participate in a learning situation that is controlled by the instructor?

Yes 4 No 0 Any Comment:

14. Would you rather participate in a learning situation in which the pace of learning is determined by the group you are in?

Yes 4 No 0 Any Comment:

Note: These are the results form the subjects in the student-paced group

APPENDIX F

QUINSIGAMOND COMMUNITY COLLEGE

DIVISION OF DEVELOPMENTAL STUDIES

SYLLABUS

EN 100 ENGLISH COMMUNICATION SKILLS

This course is designed to develop and refine students' skills in reading, writing, and studying. The students' strengths and weaknesses are determined, and an individualized program of study is designed for each student. The student begins at his/her respective level in the above areas, and is guided through the program of study.

3 semester credits
4 contact hours

A. Purposes and Goals of the Course

A student's writing, reading, study skills, vocabulary and/or spelling abilities will be developed to a level where he/she can function successfully in a college program.

B. Course Requirements - Writing

At the completion of this course, the student will have written at least five (5) one-paragraph papers of at least 200 words each stressing controlling idea, development, and conclusion. The final comprehensive essay will be as indicated below.

COMPREHENSIVE ESSAY

1. Introductory Paragraph

This introductory paragraph will begin with at least one sentence which attempts to provoke a reader's interest. This will be followed by a sentence that contains a controlling idea which clearly states the issues to be developed and the direction the theme will take. The introductory paragraph will be approximately 50 - 75 words long.

2. Development Paragraph

The first sentence of this paragraph will contain a transition from the introductory paragraph. Following this, the student will develop all the issues stated in the thesis statement, devoting at least one paragraph to each issue developed. Each paragraph of development will contain approx-

APPENDIX F (CONT.)

imately 75 - 100 words. If more than one paragraph of development is needed, there will be transitions between each paragraph.

3. Concluding Paragraph

The first sentence of this concluding paragraph will contain a transition from the previous paragraph. Following this, the student will make a statement which evaluates, judges, or summarizes the issues developed. The concluding paragraph will contain 50 - 75 words.

4. Variety of Sentence Structure

The student will demonstrate his ability to logically integrate into this theme at least four (4) of the six (6) following types of sentence structure:

a. A simple declarative sentence

b. A compound sentence with a comma coming before coordinating conjunction

c. A complex sentence with the dependent clause coming first with a comma after it

d. A compound sentence with a semi-colon between the independent clauses

e. A complex sentence with the dependent clause coming last with no comma

f. A sentence which contains a series with commas up to the "and"

5. Mechanical Errors

The student will be allowed the following number and types of errors per paper:

| | | | |
|---|---|---|---|
| spelling | -1 | subject-verb agreement | -1 |
| punctuation | -2 | parallellism | -1 |
| fragments | -0 | pronoun-reference agreement | -1 |
| run-on sentences | -0 | tense shift | -0 |
| comma splice | -0 | wrong word | -0 |
| awkward sentence | -1 | shift in point of view | -0 |
| contractions | -0 | word needed | -0 |
| | | meaningless sentence | -0 |

APPENDIX F (CONT.)

6. Proper Usage

The student will not use slang (e.g. cool it) or overused expressions (e.g. it's raining cats and dogs).

B 2 Course Requirements- Reading Comprehension

Through various individualized reading assignments, the student will be expected to achieve the following objectives:

To determine significant details within a given reading selection at the college level with at least 70% accuracy.

To isolate the main idea within a given reading selection at the college level with at least 70% accuracy.

To distinguish between fact and opinion within a given reading selection at the college level with at least 70% accuracy.

To determine implied meaning within a given reading selection at the college level with at least 70% accuracy.

To analyze word meaning through the process of contextual analysis within a given reading selection at the college level with at least 70% accuracy.

To recall significant details within a given reading solection at the college level with at least 70% accuracy.

To have a total reading score of 9.5 or better on the Nelson-Denny Reading Test.

B 3 Course Requirements- Study Skills

At the completion of this course, the student will achieve the following objectives:

a. The student will demonstrate his knowledge of the techniques of Taking Objectives in College by achieving at least 70% on the post test on this unit.

APPENDIX F (CONT.)

b. The student will demonstrate his knowledge of the tecnique of Taking Notes in College by achieving at least 70% on the post test in this unit.

c. The student will demonstrate his knowledge of the tecniques of Taking Essay Tests in College by achieving at least 70% on the post test on this unit.

d. The student will demonstrate his knowledge of the techniques of Reading a College Textbook by achieving at least 70% on the post test on this unit.

e. The student will demonstrate his knowledge of the techniques of Scheduling Time in College by achieving at least 70% on the post test on this unit.

f. The student will demonstrate his knowledge of the techniques of Setting Conditions for Studying in College by achieving at least 70% on the post test on this unit.

g. The student will demonstrate his knowledge of the techniques of Basic Research Skills in College by achieving at least 70% on the post test on this unit.

h. The student will demonstrate his knowledge of the techniques of Use of the Dictionary in College by achieving at least 70% on the post test on this unit.

B Course Requirements - Vocabulary
4

At the completion of this course, the student's vocabulary level must be no lower than the 9.5 grade level on the Nelson-Denny Standardized Reading Test. If his/her level is at this point or higher at the beginning of this course, then she/he will be expected to improve at least six months in his/her vocabulary level.

C. METHODOLOGY

1. Texts and other materials

a. Individual Audio-tutorial learning modules both commercially and

faculty produced. These consist of an audio-tape and an accompanying printed component.

b. Small group cassette - film strip presentations

c. Individualized commercially produced reading kits and machines.

2. Class Procedures and Techniques

At the beginning of the course students reading and writing levels are ascertained using the Nelson-Denny Reading Test, the P.A.M. Grammar Survey, and an in class writing sample. Based on this diagnosis, a program of study for each Student is developed.

Each student is then guided through the program of study by his/her faculty advisor. The student begins at his/her starting level in reading, writing, and study skills, and progresses through the program of study according to his/her particular rate and style of learning. This is accomplished through various methods such as small group work, individual tutoring, and audio-tutorial work.

3. Audio-Visual Materials to be Used (see 1. Texts and Other Materials)

D. Course Outline

Since each student progresses through the course requirements at his/her own pace, a course outline is not necessary.

E. Methods of Evaluation

The Writing Section counts as one-third of the final grade and requires successful completion of five (5)

APPENDIX F (CONT.)

essays as defined in the course requirements.

The Reading Section counts as one-third of the final grade and is based on the amount of improvement shown on the post test.

(see Course Requirements)
6 months - one year = C
1 year - one-and-half years = B
1 1/2 years or higher = A

The vocabulary, Spelling, and Study Skills sections count as one-third of the final grade and are based on an average of all quizzes taken.

# APPENDIX G

## PROGRAM OF STUDY

FOR _____ EN _____ SEM. _____ ADVISOR _____

| ASSIGNED | UNIT TITLE | DATE COMPLETED |
|---|---|---|
| | 111 NOUNS END IZ, Z, S | |
| | 112 NOUNS END ST, SK, SP | |
| | 113 IRREGULAR NOUN PLURALS | |
| | 121 NOUNS THAT DO NOT END IN S | |
| | 122 NOUNS THAT END IN S | |
| | 131 PERSONAL PRONOUNS | |
| | 132 POSSESSIVE PERSONAL PRONOUNS | |
| | 133 INDEFINITE PRONOUNS | |
| | 141 VERBS THAT END IN IX, X, S | |
| | 142 VERBS THAT END IN ST, SK, SP | |
| | 143 HAVE, SAY,DO | |
| | 151 PAST VERBS THAT END IN ID, D, T | |
| | 152 VERB PHRASES HAS, HAVE | |
| | 153 VERB PHRASES BE, AM, WAS, ETC. | |
| | 154 DERIVED ADJECTIVES | |
| | 161 COMMON IRREGULAR VERBS | |
| | 162 LIE/LAY, SIT/SET, RISE/RAISE | |
| | 163 WAS, WERE | |
| | 171 OMISSION OF AM, IS, ARE, WAS, WERE | |
| | 172 OMISSION OF WILL, HAVE | |

APPENDIX G (CONT.)

| ASSIGNED | UNIT TITLE | DATE COMPLETED |
|---|---|---|
| 200 | USE OF ARTICLES (A, AN, THE) | |
| 201 | THE SUBJECT | |
| 202 | THE PREDICATE | |
| 203 | PRONOUN AGREEMENT IN CASE/NO. (no tape) | |
| 204 | SUBJECT/VERB AGREEMENT IN NO, | |
| 205 | SIMPLE DECLARATIVE SENTENCE | |
| 206 | COMPOUND SENTENCES | |
| 207 | COMPLEX SENTENCES | |
| 208 | SENTENCE VARIETY | |
| 209 | RUN-ON SENTENCES | |
| 210 | DANGLING MODIFIERS | |
| 211 | SENTENCE FRAGMENTS | |
| 212 | COMMA SPLICES | |
| 213 | PARALLELISM, PART 1 | |
| 214 | PARALLELISM, PART 2 | |
| 215 | INTRODUCTORY PARAGRAPH | |
| 216 | PARAGRAPH OF DEVELOPMENT | |
| 217 | CONCLUDING PARAGRAPH | |
| 218 | THE DEPENDENT CLAUSE | |
| 219 | THE COMMA | |
| 220 | COMPOUND/COMPLEX SENTENCE REVIEW | |

APPENDIX G (CONT.)

| ASSIGNED | UNIT TITLE | DATE COMPLETED |
|---|---|---|
| | 400 | |
| | 401 INTRODUCTION TO FACTUAL RECALL | |
| | 402 INTRODUCTION TO IMPLIED MEANING | |
| | 403 RFU (GENERAL- SENIOR) | |
| | RFU STARTING LEVEL _____ | |
| | REQUIRED NO. OF UNITS | |
| | 404 SRA | |
| | SRA STARTING LEVEL _____ | |
| | REQUIRED NO. OF UNITS | |
| | 405 EDL | |
| | EDL STARTING LEVEL _____ | |
| | REQUIRED NO. OF UNITS | |
| | 406 CRAIG READING PROGRAM | |
| | CRAIG STARTING LEVEL _____ | |
| | REQUIRED NO. OF UNITS | |
| | 407 AMERICAN SPEECH SOUNDS | |

APPENDIX G (CONT.)

| ASSIGNED | UNIT TITLE | DATE COMPLETED |
|---|---|---|
| | 301 READING COLLEGE TEXTBOOKS (SQ3R) | |
| | 302 NOTETAKING SKILLS | |
| | 303 SCHEDULING TIME IN COLLEGE | |
| | 304 GENERAL RULES FOR TAKING TESTS | |
| | 305 TAKING OBJECTIVE TESTS IN COLLEGE | |
| | 306 TAKING ESSAY TESTS IN COLLEGE | |
| | 307 BASIC SKILLS IN RESEARCH | |
| | 308 | |
| | 309 | |
| | 310 USING THE DICTIONARY | |
| | 311 SYLLABICATION | |
| | 312 CONTEXT CLUES AND ANALYSIS | |
| | 313 SUBJECT MATTER VOCABULARY SKILLS | |
| | 314 WORDS COMMONLY CONFUSED | |
| | 315 WRITING THE NARRATIVE | |